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EXAMINER	
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1756	

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11

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
09/880,689	FIELDS et al
Examiner	**Group Art Unit**
J. DOTE	1756

8-11

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If th period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

☒ Responsive to communication(s) filed on 11/12/02.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle,* 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) 1-42 is/are pending in the application.

Of the above claim(s) _____ is/are withdrawn from consideration.

☒ Claim(s) 40, 41 is/are allowed.

☒ Claim(s) 1-31, 35, 36, 42 is/are rejected.

☒ Claim(s) 32-34, 37-39 is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Pri rity under 35 U.S.C. § 119 (a)-(d)

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

☐ All ☐ Some* ☐ None of the:

☐ Certified copies of the priority documents have been received.

☐ Certified copies of the priority documents have been received in Application No. _____.

☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____.

Attachment(s)

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☒ Notice of Reference(s) Cited, PTO-892

☐ N tice f Informal Pat nt Application, PTO-152

☐ Notice of Draftsperson's Patent Drawing Revi w, PTO-948

☐ Other _____

Office Action Summary

1. The examiner acknowledges the cancellation of claim 43 and the amendments to claims 1 and 42 filed in Paper No. 10 on Nov. 12, 2002. Claims 1-42 are pending.

2. The objection to specification set forth in the office action mailed Jun. 12, 2002, Paper No. 9, paragraph 3, has been withdrawn in response to the replacement paragraphs at pages 12 and 24 and the table at page 22 of the specification, filed in Paper No. 10.

The objection to the specification set forth in Paper No. 9, paragraph 4, has been withdrawn in response to the replacement paragraphs at pages 10 and 13, of the specification, filed in Paper No. 10.

The rejections of claim 42 under 35 U.S.C. 102(e) over US 6,074,795 (Watanabe), and of claims 1-14, 16-23, 25-29, and 43 under 35 U.S.C. 103(a) over Watanabe, alone or combined with the other cited references, set forth in Paper No. 9, paragraphs 9-15, have been withdrawn in response to the amendments to claims 1 and 42, wherein claim 1 now requires that the inorganic particles be "colloidal inorganic particles," and claim 42 now requires that the inorganic particles comprise "colloidal" silica. As discussed in the rejection in Paper No. 9, paragraph 9, Watanabe exemplifies a toner comprising hydrophobic silica particles, HDK2000. See example 4 at

cols. 9-10. The evidence on the present record is insufficient to determine whether the commercially available HDK2000 particles are "colloidal" silica particles.

The rejections of claims 1-4, 16, and 42 under 35 U.S.C. 102(b) over US 5,863,692 (Nakamura), and of claims 5, 7, 10, 19, 31, and 36 under 35 U.S.C. 103(a) over Nakamura, alone or combined with the other cited references, set forth in Paper No. 9, paragraphs 17-21, have been withdrawn in response to the amendments to claims 1 and 42 described supra. As discussed in the rejection in Paper No. 9, paragraph 17, Nakamura exemplifies a toner comprising hydrophobic silica particles. See toner J example 6 at col. 14. The hydrophobic silica particles are the commercially available H-2000 from Hoechst. Co. The evidence on the present record is insufficient to determine whether the commercially available H-2000 particles are "colloidal" silica particles.

(Applicants' allegation that hydrophobic silica has different properties from colloidal silica, in particular, that "colloidal silica is dispersible in water while hydrophobized silica is not," is mere attorney argument. Applicants have not come forward with any objective evidence to support their allegation.)

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1, 2, 5-7, 10, 16, 19, 31 and 36 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Instant claim 1 recites that the inorganic particles present in the toner resin are "colloidal inorganic particles." The originally filed specification does not provide an adequate written description for the term "colloidal inorganic particles" as recited in the instant claims. The originally filed specification at page 8, lines 16-17, discloses that the inorganic particles are preferably silica, and that the silica is "preferably colloidal silica." The originally filed specification does not disclose the use of the generic "colloidal inorganic particles" recited in the instant claims. The genus "colloidal inorganic particles" recited in the instant claims is broader than the disclosed species "colloidal silica" because it includes other colloidal inorganic particles that are not silica.

5. The indicated allowability of claims 15 and 24 is withdrawn in view of the newly discovered reference to US 6,416,920 B1 (Hopper'920), and on further review of US 6,074,795 (Watanabe). Rejections based on Hopper'920 and Watanabe follow.

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. The term "2'/10' MECCA charge ratio" is defined as the ratio of the level of charge obtained in 2 minutes of charging the toner to the level of charge obtained after 10 minutes of charging, where the charge is determined in a MECCA device. See the instant specification, page 19, lines 15-21, and page 22, lines 1-15.

9. Claim 30 and 35 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 6,074,795 (Watanabe).

The claims are rejected for the reasons set forth in Paper No. 9, paragraph 8, which are incorporated herein by reference.

Applicants' arguments filed in Paper No. 10 have been fully considered but they are not persuasive for the reasons discussed in Paper No. 9, paragraph 8, which are incorporated herein by reference. Applicants have not provided any objective evidence disproving the examiner's position that because Watanabe's toner maintains a substantially constant charge rate, starting from t=0 and lasting for a long time period, "a person having ordinary skill in the art would not have expected the charge in two minutes to differ substantially from the virtually identical values at zero minutes and at greater than ten minutes." Contrary to applicants' comments in Paper No. 10, page 11, line 1, applicants did not provide a copy of the Nash reference.

Should applicants provide a copy of Nash and if the examiner were to determine that applicants' description of Nash in Paper No. 10 is accurate, the rejection would be withdrawn for the reasons given by applicants in Paper No. 10.

10. Claims 1-4, 16, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable Watanabe, as evidenced by US 6,103,439 (Ogawa) and US 5,422,214 (Akiyama).

Watanabe discloses a developer comprising carrier particles and a toner. The toner particles comprise a binder resin, carbon black, a charge control agent, and a releasing composition A. Releasing composition A comprises 100 parts by weight of polypropylene wax as the releasing agent and 20 parts by weight silica particles R-972, manufactured by Nippon Aerosil Co. See example 1 at cols. 6-7. Silica particles R-972 are recognized in the art as "colloidal" silica. See Ogawa, col. 12, lines 12-13; and Akiyama, col. 30, lines 34-38. The carrier particles may comprise iron powder, ferrite powder, magnetite, and nickel powders. Col. 6, lines 25-27.

Watanabe's toner in example 1 comprises 84.7 wt% of a styrene/butyl acrylate binder resin, 1.7 wt% of a charge control agent, about 4.2 wt% of a polyethylene releasing agent, about 0.8 wt% of the "internal" silica particles, based on the weight of the toner particles. The percentages are determined from the amounts reported in Watanabe's example 1.

The upper limit of the range "about 0.1 wt% to about 0.5 wt%" recited in instant claim 1 on the present record reads on the amount of "about 0.8 wt%" disclosed by Watanabe, since the term "about" admits variation and there is no evidence on the

present record showing that the amount of "about 0.5 wt%" is critical. Put another way, there is no evidence showing that the amount of "about 0.5 wt%" is different in kind from "about 0.8 wt%."

If the amount of "about 0.8 wt%" is considered to be outside the range recited in instant claim 1, Watanabe also discloses that releasing agents can be preferably used in an amount of about 0.5 to about 20 wt%. Col. 2, lines 45-47. Watanabe discloses that toners comprising the releasing agent in combination with particles, such as silica particles, capable of absorbing said releasing agent, have good transferability and durability, and produce good quality toner images without offset. Col. 2, lines 23-29.

If the amount of the polypropylene releasing agent in Watanabe's toner in example 1 were adjusted to about 0.5 wt% based on the weight of the toner particles, as taught by Watanabe, the amount of the polyethylene releasing agent would be about 0.5 part by weight and the amount of silica particles would be about 0.1 part by weight per 100 parts by weight of toner particles. The amount of binder resin in the toner in example 1 would be adjusted to about 93.5 parts by weight, while the amounts of colorant and charge control agent remain the same. The silica particles would be present in an amount of about 0.1 wt% based on the weight of the toner particles, which is within the range recited in instant claim 1. (The amount of about

0.1 part by weight is determined from the composition of releasing composition A in Watanabe's example 1).

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Watanabe, to adjust through routine experimentation the amount of the polypropylene releasing agent to about 0.5 wt% based on the weight of the toner particles in the toner disclosed by Watanabe, resulting in the amount of about 0.1 wt% of silica particles in the toner particles, because that person would have had a reasonable expectation of successfully obtaining a developer having good transferability and durability, and producing good quality toner images without offset as taught by Watanabe.

Watanabe's toner in example 1 does not comprise a surface treatment agent as recited in instant claim 1. However, Watanabe teaches that hydrophobized silica particles may be further externally added to the toner to improve fluidity, developing properties, and transferability of the toner. Col. 6, lines 13-18, and examples 2-8. Watanabe's toners in examples 2-8 comprise 0.2, 0.3, 0.4, or 0.5 parts by weight of externally added hydrophobized silica particles, based on 100 parts by weight of toner particles.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Watanabe, to further externally add hydrophobized silica particles in an

amount of 0.2 to 0.5 parts by weight per 100 parts by weight of toner particles to the developer disclosed or rendered obvious over the teachings of Watanabe, because that person would have had a reasonable expectation of successfully obtaining a developer having the properties disclosed by Watanabe and having improved fluidity, developing properties, and transferability of the toner.

11. Claims 5, 10, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe, as evidenced by Ogawa and Akiyama, as applied to claim 1 above, further combined with US 5,230,978 (Kawasaki).

Watanabe, as evidenced by Ogawa and Akiyama, renders obvious a developer as described in paragraph 10 above, which is incorporated herein by reference.

Watanabe's toner in example 1 comprises a styrene/butylacrylate copolymer as the binder resin. Watanabe does not disclose that the copolymer is cross-linked as recited in instant claim 5. However, Watanabe discloses that the binder resin can include known resins that are used for conventional toners, such as copolymers of styrene and acrylates. Col. 5, lines 3-17.

Kawasaki discloses a toner binder resin comprising a cross-linked styrene-acrylate copolymer, which is within the scope of

the binder resin limitation recited in instant claim 5. Col. 2, lines 13-24, and production examples 2-7. Kawasaki discloses that toners comprising said copolymer have low-temperature fixing properties, and have excellent strength to be used in high-speed copying machines. Col. 1, lines 57-61. The toners have a wide non-offset temperature range and provide stable and good-quality images without fog. Col. 1, line 63, to col. 2, line 3, and Table 1 at col. 6, examples 2-7.

Claim 10 is written in product-by-process format. Kawasaki does not disclose that the cross-linked styrene-acrylate copolymer is made by a "limited coalescence" process as recited in instant claim 10. However, as discussed above, Kawasaki's copolymer meets the compositional limitations recited in instant claim 5. Accordingly, Kawasaki's copolymer appears to be the same or substantially the same as the toner resin made by the "limited coalescence" process recited in instant claim 10. The burden is on applicants to prove otherwise. In re Marosi, 218 USPQ 289 (Fed. Cir. 1983); In re Thorpe, 227 USPQ 964 (Fed. Cir. 1985); MPEP 2113.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Kawasaki, to use Kawasaki's cross-linked styrene-acrylate copolymer as the binder resin in the toner rendered obvious over the teachings of Watanabe, because that person would have had a reasonable

expectation of successfully obtaining a developer capable of being used in a high-speed copier, and providing high-quality images without fog when fixed at low temperatures.

12. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe, as evidenced as evidenced by Ogawa and Akiyama, as applied to claim 1 above, further combined with US 5,990,332 (Sukata).

Watanabe, as evidenced by Ogawa and Akiyama, renders obvious a developer as described in paragraph 10 above, which is incorporated herein by reference.

Watanabe's toner in example 1 does not comprise an organo iron complex charge agent as recited in instant claim 6. However, Watanabe discloses that the charge control agent can include one or more known charge control agents, such as metal complexes of monoazo dyes, and iron complexes of salicylic acid, dialkylsalicylic acids, naphtholic acid, or dicarboxylic acid. Col. 5, lines 53-54, and col. 6, lines 7-11.

Sukata discloses charge controlling iron complexes of aromatic hydroxycarboxylic acids represented by formula (I) at col. 2, lines 40-59. See Table 1, compounds 35 to 48 (which include complexes of salicylic acids or of hydroxy naphtholic acids), example 3 at col. 19, and example 16 at col. 25. Sukata discloses that said complexes of aromatic hydroxycarboxylic acid

have excellent charge control or charge enhancing properties, environmental resistance to temperature and humidity storage stability, heat stability, and durability. Col. 2, lines 16-27, and example 16. When the complexes are used in toners, they do not affect toner fixability or offset property. Col. 2, lines 28-29.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Watanabe and Sukata, to use Sukata's iron complex of an aromatic hydroxycarboxylic acid as the charge control agent in the toner rendered obvious over the teachings of Watanabe, because that person would have had a reasonable expectation of successfully obtaining a developer having the benefits disclosed by Sukata.

13. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe, as evidenced by Ogawa and Akiyama, as applied to claim 1 above, further combined with US 5,707,772 (Akimoto).

Watanabe, as evidenced by Ogawa and Akiyama, renders obvious a developer as described in paragraph 10 above, which is incorporated herein by reference.

Watanabe's toner in example 1 does not comprise a polyethylene wax as recited in instant claim 6. However, Watanabe discloses that the releasing agent can equally be a low

molecular weight polyethylene wax. Col. 4, lines 49-50 and 55. Watanabe discloses that releasing agents having a melting point from about 60 to about 160°C can used to prepare toners having good preservability, good resistance to blocking, and good releasability from fixing rollers. Col. 4, lines 58-61.

Akimoto discloses a low molecular weight polyethylene releasing agent synthesized by using a metallocene catalyst. Akimoto discloses that said polyethylene releasing agent has a sharp molecular weight distribution and a melting point of 80°C. Col. 2, lines 61-64, and releasing agent **2** in Table 1. The melting point of 80°C is within the teachings of Watanabe. Akimoto discloses that a toner comprising said polyethylene releasing agent has improved storage stability, fixing property, and durability. Col. 2, lines 65-67. The toner also exhibits little off-set and less "winding phenomenon." Col. 2, lines 21-22, and toner **2** in Table 2.

It would have been obvious for a person having ordinary skill in the art to use Akimoto's polyethylene releasing agent as the wax in the toner rendered obvious over the teachings of Watanabe, because that person would have had a reasonable expectation of successfully obtaining a developer having the improvements disclosed by Akimoto.

14. Claims 8, 9, 12, 14, 17, 18, 21, 23, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe, as evidenced by Ogawa and Akiyama, combined with Kawasaki, as applied to claims 5, 10, and 19 above, further combined with Sukata.

The teachings of Watanabe, as evidenced by Ogawa and Akiyama, combined with teachings of Kawasaki render obvious a developer as described in paragraph 11 above, which is incorporated herein by reference. The amounts of the charge control agent used in the Watanabe's toner in example 1 is within the ranges recited in instant claims 12 and 14. The amounts of the colloidal silica particles and binder resin in Watanabe's toner of example 1 are also within the ranges recited in instant claim 12. The amount of about 0.1 wt% of colloidal silica particles, the amount of about 93.5 wt% of binder resin, and the amount of 0.2 to 0.5 wt% of externally added hydrophobized silica particles amount, based on the weight of the toner particles, rendered obvious over the teachings of Watanabe, are within the ranges recited in instant claims 12 and 14.

Watanabe's toner in example 1 does not comprise an organo iron complex charge agent as recited in instant claims 8, 12, and 14. However, Watanabe discloses that the charge control agent can include one or more known charge control agents, such as metal complexes of monoazo dyes, and iron complexes of

salicylic acid, dialkylsalicylic acids, naphthoic acid, or dicarboxylic acid. Col. 5, lines 53-54, and col. 6, lines 7-11.

Sukata discloses charge controlling iron complexes of aromatic hydroxycarboxylic acids represented by formula (I). The discussion of Sukata in paragraph 12 above is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Watanabe and Sukata, to use Sukata's iron complex of an aromatic hydroxycarboxylic acid as the charge control agent in the toner rendered obvious over the combined teachings of Watanabe and Kawasaki, because that person would have had a reasonable expectation of successfully obtaining a developer having the benefits disclosed by Sukata.

15. Claims 11, 13, 15, 20, 22, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe, as evidenced by Ogawa and Akiyama, combined with Kawasaki and Sukata, as applied to claims 8, 9, 12, 14, 17, 18, 21, and 23, above, further combined with Akimoto.

The teachings of Watanabe, as evidenced by Ogawa and Akiyama, combined with the teachings of Kawasaki and Sukata render obvious a developer as described in paragraph 14 above, which is incorporated herein by reference.

The amount of about 4.2 wt% of the releasing agent disclosed in Watanabe's toner in example 1, and the amount of about 0.5 wt% rendered obvious over the teachings of Watanabe, are both within the range recited in instant claim 13. The amount of "about 1.8 wt%" recited in instant claim 15 on the present record reads on the amount of "about 0.5 wt%," since the term "about" admits variation and there is no evidence on the present record showing that the amount of "about 1.8 wt%" is critical. Put another way, there is no evidence showing that the amount of "about 1.8 wt%" is different in kind from "about 0.5 wt%."

Watanabe's toner in example 1 does not comprise a polyethylene wax as recited in instant claims 11, 13, and 15. However, Watanabe discloses that the releasing agent can equally be a low molecular weight polyethylene wax. Col. 4, lines 49-50 and 55. Watanabe discloses that releasing agents having a melting point from about 60 to about 160°C can used to prepare toners having good preservability, good resistance to blocking, and good releasability from fixing rollers. Col. 4, lines 58-61.

Akimoto discloses a low molecular weight polyethylene releasing agent. The discussion of Akimoto in paragraph 13 above is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art, to use Akimoto's polyethylene releasing agent as the wax in the toner rendered obvious over the teachings of Watanabe, Kawasaki, and Sukata, because that person would have

had a reasonable expectation of successfully obtaining a developer having the improvements disclosed by Akimoto.

16. Claims 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe, as evidenced by Ogawa and Akiyama, combined with Kawasaki and Sukata, as applied to claim 21 above, further combined with US 5,500,320 (Saha).

The teachings of Watanabe, as evidenced by Ogawa and Akiyama, combined with the teachings of Kawasaki and Sukata render obvious a developer as described in paragraph 14 above, which is incorporated herein by reference.

Watanabe does not disclose that the carrier particles can comprise strontium ferrite particles as recited in the instant claims. However, Watanabe discloses that the carrier particles can comprise ferrite powders coated with a resin. Col. 6, lines 25-27.

Saha teaches hard magnetic carrier particles comprising strontium ferrite particles coated with a polymeric coating. Col. 3, lines 58-67, and col. 9, lines 43-46. Saha discloses that said carrier particles provide developer compositions for magnetic brush development having high development speeds without loss of copy image quality. Col. 3, lines 2-15, col. 6, lines 25-39, and col. 10, lines 6-41.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Saha, to use Saha's strontium ferrite resin coated particles as the carrier particles in the developer rendered obvious over the combined teachings of Watanabe, Kawasaki, and Sukata, because that person would have had a reasonable expectation of successfully obtaining a developer capable of being used for magnetic brush development having high development speeds without loss of copy image quality.

17. Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe, as evidenced by Ogawa and Akiyama, combined with Kawasaki, Sukata, and Saha, as applied to claim 27 above, further combined with US 5,102,769 (Creatura).

The teachings of Watanabe, as evidenced by Ogawa and Akiyama, combined with the teachings of Kawasaki, Sukata, and Saha render obvious a developer as described in paragraph 16, which is incorporated herein by reference.

Saha does not teach that its strontium ferrite carrier particles are coated with a blend of polyvinylidiene and polymethmethacrylate polymers as recited in instant claims 28 and 29. However, Saha teaches that his carrier particles can be coated with a poly(vinylidiene fluoride) resin (e.g., KYNAR) or polymethacrylate resins. Col. 7, lines 7 and 14-15.

Creatura teaches that magnetic carrier particles can be coated with a polymeric coating comprising a blend of poly(vinylidiene fluoride) and poly(methylmethacrylate) in a weight of ratio of 3 to 2. Example V at cols. 11-12. The ratio of 3 to 2 meets the ratio of about 80/20 to about 50/50 recited in instant claim 29. Creatura discloses that developers comprising said carrier particles provide images having acceptable solids, excellent halftones, and desirable line resolution, with acceptable or substantially no background deposits. Col. 10, lines 25-29.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Creatura, to coat Saha's strontium ferrite carrier particles with Creatura's polymeric coating and to use those carrier particles in the developer rendered obvious over the combined teachings of Watanabe, Kawasaki, Sukata, and Saha, because that person would have had a reasonable expectation of successfully obtaining a developer capable of providing toner images having acceptable solids, excellent halftones, and desirable line resolution, with acceptable or substantially no background deposits, as taught by Creatura.

18. Applicants' arguments filed in Paper No. 10 with respect to the rejections set forth in paragraphs 10-17 above have been fully considered but they are not persuasive.

Applicants argue that the rejections over Watanabe fail because Watanabe's silica particles are not colloidal particles as required in instant claim 1.

However, as noted in the rejection in paragraph 10 above, the prior art recognizes the commercially available silica particles R-972 as colloidal silica. Thus, on the present record, Watanabe's internally added silica particles are colloidal.

Applicants argue that there is no teaching in Watanabe that would indicate that using the lowest amount of releasing agent discussed in Watanabe would produce the beneficial results listed by the examiner. Applicants also argue that the examiner's calculation is "not completely valid" because if the amount of wax was reduced to the lowest level, "this would change the ratio of silica to wax set forth in" the example.

However, as discussed in the rejection in paragraph 10 above, Watanabe teaches that its releasing agent composition provides toners having good transferability and durability, and produce good quality toner images without offset. Col. 2, lines 23-34. Watanabe also teaches that the releasing agent is preferably present in an amount of about 0.5 to about 20 wt%.

Col. 2, lines 45-47. Although Watanabe may not exemplify toners comprising a releasing agent in an amount of about 0.5 wt%, "[I]n a section 103 inquiry, 'the fact that a specific [embodiment] is taught to be preferred is not controlling, since all disclosures of the prior art, including unpreferred embodiments, must be considered.'" Merck & Co. Inc. v. Biocraft Laboratories Inc., 10 USPQ2d 1843, 1846 (Fed. Cir. 1989) (quoting In re Lamberti, 192 USPQ 278, 280 (CCPA 1976)). Furthermore, the examiner's calculation of the amount of silica particles is not in error. The weight ratio of silica particles to polypropylene wax in releasing composition A is 0.20 (i.e., 20/100). The weight ratio of about 0.1 wt% of silica particles to about 0.5 wt% of polypropylene wax is also 0.20. Accordingly, for the reasons discussed above and in the rejections in paragraphs 10-17, supra, the rejections over Watanabe stand.

19. Claims 30 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,744,274 (Wilson'274).

Wilson'274 exemplifies developers comprising toner particles and a magnetic carrier coated with polymethylmethacrylate (PMMA). The toner particles have a charge rate that is within the range of about 0.9 to about 1.1 recited in instant claim 30. For example, the toner particles comprising 1 pph of compound 1 exhibit a MECCA charge to mass ratio after two minutes of mixing

the toner particles with the PMMA carrier of -25.81 μC/g, and a MECCA charge to mass ratio after ten minutes of mixing of -28.59 μC/g. The 2'/10' MECCA charge ratio is 0.9. See the first entry in the results table at col. 12. The toner particles comprising 1 pph of compound 4 exhibit a MECCA charge to mass ratio after two minutes of mixing the toner particles with the PMMA carrier of -32.11 μC/g, and a MECCA charge to mass ratio after ten minutes of mixing of -28.80 μC/g. The 2'/10' MECCA charge ratio is 1.1 See the tenth entry in the results table at col. 12.

20. Claims 30 and 35 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,221,550 B1 (Wilson'550).

Wilson'550 exemplifies a developer comprising toner particles and a magnetic carrier. The toner particles have a charge rate that is within the range of about 0.9 to about 1.1 recited in instant claim 30. See sample 11 in Table II at col. 13. The toner particles exhibit a MECCA charge to mass ratio after two minutes of mixing the toner particles with the carrier of -47.7 μC/g, and a MECCA charge to mass ratio after ten minutes of mixing of -48.2 μC/g. The 2'/10' MECCA charge ratio is 0.99.

21. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,912,009 (Amering) combined with Diamond, Handbook of Imaging Materials, p. 169.

Amering discloses an electrophotographic developer comprising a toner comprising toner particles and a magnetic carrier. See example 1. The toner particles comprise a cross-linked styrene-acrylic resin, a colorant, and a charge control agent. The cross-linked styrene-acrylic resin is obtained by a suspension polymerization method in the presence of colloidal silica as a suspending agent. Col. 7, lines 34-50. Amering teaches that the resulting resin comprises dispersed therein colloidal silica. Amering discloses that the toner comprising said resin has unexpected advantages, such as good environmental stability. Col. 5, lines 6-18. In other words, the charge of the toner stays substantially stable.

Amering does not exemplify toners further comprising a surface treatment agent as recited in the instant claims. However, the use of surface additives are well known in the art of electrophotographic toners. See Diamond, page 169. Diamond discloses that the addition of surface additives such as fumed silicas to the surface of toner particles dramatically improves the flow properties of said particles that would otherwise tend to stick to each other. Diamond also discloses that the use of said silicas improves the charge stability of the toner and

carrier mixture; and improves toner transfer from the photoreceptors to paper by lowering adhesion of the toner to the photoreceptor. Diamond also discloses that for blade cleaning, surfactant materials such as zinc stearate are blended with the toner to lubricate the blade passing over the photoreceptor.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Diamond, to externally add fumed silicas and/or zinc stearate to the toner particles disclosed by Amering, because that person would have had a reasonable expectation of successfully obtaining a developer having improved toner flowability, charge stability, transferability, and cleaning properties.

22. Claims 1-5, 7, 10, 16, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,416,920 B1 (Hopper'920) combined with Diamond, Handbook of Imaging Materials, p. 169.

Hopper'920 discloses a developer comprising a magnetic carrier and toner particles. The toner particles comprise 85.5 wt% of a cross-linked styrene-acrylate copolymer, 4.3 wt% of a colorant, 7.1 wt% of a polyethylene wax, and 2.6 wt% of colloidal aluminized silica. See col. 15, lines 25-62, and example 1 at cols. 15-17.

Claim 10 is written in product-by-process format. Hopper'920 does not disclose that the cross-linked styrene-acrylate copolymer is made by a "limited coalescence" process as recited in instant claim 10. However, as discussed above, Hopper'920's copolymer meets the compositional limitations recited in instant claim 5. Accordingly, Hopper'920's copolymer appears to be the same or substantially the same as the toner resin made by the "limited coalescence" process recited in instant claim 10. The burden is on applicants to prove otherwise. Marosi, supra; Thorpe, supra; MPEP 2113.

The upper limit of the range of "about 0.1 wt% to about 0.5 wt%" recited in instant claim 1 on the present record reads on the amount of 2.6 wt% of colloidal aluminized silica, since the term "about" admits variation and there is no evidence on the present record showing that the amount of "about 0.5 wt%" is critical. Put another way, there is no evidence showing that the amount of "about 0.5 wt%" is different in kind from "2.6 wt%."

If the amount of "2.6 wt%" is considered to be outside the range recited in instant claim 1, Hopper'920 teaches that the amount of the colloidal aluminized silica used in the process of making its toner can be about 0.2 to about 10 wt%, preferably 0.3 to 8 wt%, based on the weight of the resin, colorant, and the colloidal aluminized silica. Col. 7, lines 29-34. The amounts of about 0.2 wt% and 0.3 wt% are within the range of 0.1 to

0.5 wt% recited in instant claim 1. Hopper'920 discloses that its toners comprising colloidal aluminized silica having less than about 3.5 wt% of colloidal aluminized silica can provide images with glossy finishes generally greater than 40 GGU. Col. 5, lines 12-15. Thus, the amount of colloidal aluminized silica is recognized in the art as a result-effective variable, the variation of which is within the skill of the ordinary worker in the art.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Hopper'920, to adjust through routine experimentation the amount of colloidal aluminized silica in the process of making the toner particles in Hopper'920's example 1, such that the resulting toner particles comprise about 0.2 wt% of colloidal aluminized silica, because that person would have had a reasonable expectation of successfully obtaining a developer that provides images having a glossy finish of greater than 40 GGU.

The developer in Hopper'920's example 1 does not comprise a charge control agent or an externally added surface treatment agent as recited in the instant claims. However, Hopper'920 teaches that a known charge control agent can be added to its toner preferably in an amount of 0.1 to 5 wt%. Col. 14, lines 44-51. Hopper'920 further teaches that surface additives, such as colloidal silicas, zinc stearates, etc., can be added to

its toner in amounts of about 0.01 to about 2 percent. Col. 14, lines 52-58. As discussed in paragraph 21, supra, Diamond teaches that the use of surface additives such as fumed silicas and zinc stearate are well-known in the art. Diamond further teaches that it is also known in the art to use charge control agents to control the charge of toners. Diamond, page 169.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Hopper'920 and Diamond, to incorporate a charge control agent in the toner particles and externally add a surface additive such as fumed silica particles and/or zinc stearate, in the amounts taught by Hopper'920, in the toner disclosed by Hopper'920 or rendered obvious over the teachings of Hopper'920, because that person would have had a reasonable expectation of successfully obtaining a developer providing images with a glossy finish greater than 40 GGu and having a desired charge level, and improved toner fluidity, developing properties, and toner transferability.

23. Claims 6, 8, 9, 11, 17, 18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hopper'920 combined with Diamond, as applied to claim 1 above, further combined with Sukata.

The combined teachings of Hopper'920 and Diamond render obvious a developer as described in paragraph 22 above, which is incorporated herein by reference.

Hopper'920's toner in example 1 does not comprise an organo iron complex charge agent as recited in instant claim 6. As discussed in paragraph 22, supra, Hopper'920 teaches that any known charge control agent may be added to its toner preferably in an amount of 0.1 to 5 wt%.

Sukata discloses charge controlling iron complexes of aromatic hydroxycarboxylic acids represented by formula (I) at col. 2, lines 40-59. The discussion of Sukata in paragraph 12 above is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Hopper'920 and Sukata, to use Sukata's iron complex of an aromatic hydroxycarboxylic acid as the charge control agent in the toner rendered obvious over the teachings of Hopper'920 and Diamond, because that person would have had a reasonable expectation of successfully obtaining a developer having the benefits disclosed by Sukata.

24. Claims 12-14, 21-23, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hopper'920 combined with

Diamond, as applied to claim 1 above, further combined with Sukata.

The combined teachings of Hopper'920 and Diamond render obvious a developer as described in paragraph 22 above, which is incorporated herein by reference. The amount of 2.6 wt% of colloidal aluminized silica in Hopper'920's toner in example 1 is within the range recited in instant claim 12. The amount of about 0.2 wt% of colloidal aluminized silica particles rendered obvious over the teachings of Hopper'920 is within the ranges recited in instant claims 12 and 14.

Hopper'920's toner in example 1 does not comprise an organo iron complex charge agent as recited in instant claim 6. As discussed in paragraph 22, supra, Hopper'920 teaches that any known charge control agent may be added to its toner preferably in an amount of 0.1 to 5 wt%.

Sukata discloses charge controlling iron complexes of aromatic hydroxycarboxylic acids represented by formula (I) at col. 2, lines 40-59. The discussion of Sukata in paragraph 12 above is incorporated herein by reference. Sukata further teaches that its charge controlling iron complexes can be in an amount of 0.1 to 10 wt%, preferably of 0.5 to 5 wt%, based on the amount of toner binder resin. Col. 15, lines 40-47. Sukata exemplifies a toner comprising 1.8 wt% of its charge controlling iron complex. See example 16 at col 25. The amount of 1.8 wt%

is within the preferred amount taught by Hopper'920, and within the ranges recited in instant claims 12 and 14.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Hopper'920 and Sukata, to use Sukata's iron complex of an aromatic hydroxycarboxylic acid in an amount of 1.8 wt% as the charge control agent in the toner rendered obvious over the teachings of Hopper'920 and Diamond, because that person would have had a reasonable expectation of successfully obtaining a developer having the benefits disclosed by Sukata.

25. Claims 15 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hopper'920 combined with Diamond and Sukata, as applied to claims 14 and 23, above, further combined with US 5,482,812 (Hopper'812).

The combined teachings of Hopper'920, Diamond, and Sukata render obvious a developer as described in paragraph 24 above, which is incorporated herein by reference.

Hopper'920's toner in example 1 comprises 7.1 wt% of polyethylene wax having a Mw of about 750. The amount of 7.1 wt% is outside the range of about 1.8 wt% recited in instant claim 15.

However, Hopper'812 teaches a method of making toner particles comprising a wax dispersion. Hopper'812's method is

similar to that disclosed in Hopper'920, but for the use of colloidal aluminized silica. Hopper'812 teaches that the low molecular weight polyethylene can be present in an amount of about 1 to about 15 wt%, preferably from about 1 to about 5 wt%. Col. 19, lines 46-52. The amount of "about 1.8 wt%" recited in instant claim 15 on the present record reads on the amount of "about 1 wt%," since the term "about" admits variation and there is no evidence on the present record showing that the amount of "about 1.8 wt%" is critical. Put another way, there is no evidence showing that the amount of "about 1.8 wt%" is different in kind from the amount of "about 1 wt%." Hopper'812 discloses that the wax is permanently or substantially contained in toners, and that the toners have excellent release characteristics. Col. 1, lines 21-26, and comparative example 1 and example 1.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Hopper'812, to adjust, through routine experimentation, the amount of polyethylene wax in the toner rendered obvious over the combined teachings of Hopper'920, Diamond, and Sukata, because that person would have had a reasonable expectation of successfully obtaining developer having the properties disclosed by Hopper'920 and Sukata and having excellent release characteristics.

26. Claims 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hopper'920 combined with Diamond and Sukata, as applied to claim 21 above, further combined with Saha.

The combined teachings of Hopper'920, Diamond, and Sukata render obvious a developer as described in paragraph 24 above, which is incorporated herein by reference.

Hopper'920 does not disclose that the carrier particles can comprise strontium ferrite particles as recited in the instant claims. However, Hopper'920 discloses that the carrier particles can comprise ferrite powders coated with a resin. Col. 15, lines 4 and 7-14.

Saha teaches hard magnetic carrier particles comprising strontium ferrite particles coated with a polymeric coating. The discussion of Saha in paragraph 16 above is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Saha, to use Saha's strontium ferrite resin coated particles as the carrier particles in the developer rendered obvious over the combined teachings of Hopper'920, Diamond, and Sukata, because that person would have had a reasonable expectation of successfully obtaining a developer capable of being used for magnetic brush development having high development speeds without loss of copy image quality.

27. Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hopper'920 combined with Diamond, Sukata, and Saha, as applied to claim 27 above, further combined with Creatura.

The combined teachings of Hopper'920, Diamond, Sukata, and Saha render obvious a developer as described in paragraph 26, which is incorporated herein by reference.

Saha does not teach that its strontium ferrite carrier particles are coated with a blend of polyvinylidiene and polymethmethacrylate polymers as recited in instant claims 28 and 29. However, Saha teaches that his carrier particles can be coated with a poly(vinylidiene fluoride) resin (e.g., KYNAR) or polymethacrylate resins. Col. 7, lines 7 and 14-15.

Creatura teaches that magnetic carrier particles can be coated with a polymeric coating comprising a blend of poly(vinylidiene fluoride) and poly(methylmethacrylate) in a weight of ratio of 3 to 2. The discussion of Creatura in paragraph 17 above is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Creatura, to coat Saha's strontium ferrite carrier particles with Creatura's polymeric coating and to use those carrier particles in the developer rendered obvious over the combined teachings of Hopper'920, Diamond, Sukata, and Saha, because that person would

have had a reasonable expectation of successfully obtaining a developer capable of providing toner images having acceptable solids, excellent halftones, and desirable line resolution, with acceptable or substantially no background deposits, as taught by Creatura.

28. Claims 40 and 41 are allowable over the prior art of record.

Claims 32-34 and 37-39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record does not teach or suggest toner particles having the particular compositions and the charge ratios recited in instant claims 32-34 and 37-41

29. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (703) 308-3625. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (703) 308-2464. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9311 (Rightfax) for after final faxes, and (703) 872-9310 for other official faxes.

Any inquiry of papers not received regarding this communication or earlier communications, or of a general nature or relating to the status of this application or proceeding should be directed should be directed to the Customer Service Center of Technology Center 1700 whose telephone number is (703) 306-5665.

JLD
January 22, 2003

Janis L. Dote
JANIS L. DOTE
PRIMARY EXAMINER
GROUP ~~1500~~ 1700